

**S22P025S05 data sheet**

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Characteristic characteristic    『Offset voltage』    『Output voltage』    『linearity』    『Hysteresis』

- 『Offset voltage』 『Output voltage』     $RL=10k\Omega$      $V_{CC}=+5V$      $I_f$  : 3 pin short

current $I_f$ (A)	Output voltage $V_{out}[V]$					Remarks
	No. 1	No. 2	No. 3	No. 4	No. 5	
0.00	2.5060	2.5047	2.5073	2.4925	2.4945	『Offset voltage』
6.25	2.6622	2.6602	2.6634	2.6485	2.6500	
12.50	2.8187	2.8160	2.8197	2.8045	2.8057	
18.75	2.9751	2.9717	2.9761	2.9609	2.9615	
25.00	3.1314	3.1271	3.1323	3.1168	3.1168	『Output voltage』

Current consumption:    12.4mA    12.4mA    12.0mA    12.2mA    12.1mA

【standard value】    Offset voltage)     $2.5 \pm 0.0125V$

【standard value】    Output voltage)     $3.125 \pm 0.017V$

【standard value】    Current consumption at 0A)    20mA

- 『Linearity』  
【considering offset voltage】

current $I_f$ (A)	Output voltage $V_{out}[V]$					Remarks
	No. 1	No. 2	No. 3	No. 4	No. 5	
0.00	0.0000	0.0000	0.0000	0.0000	0.0000	
6.25	0.1562	0.1555	0.1561	0.1560	0.1555	
12.50	0.3127	0.3113	0.3124	0.3120	0.3112	
18.75	0.4691	0.4670	0.4688	0.4684	0.4670	
25.00	0.6254	0.6224	0.6250	0.6243	0.6223	『Output gain voltage』

【reference value】     $0.625 \pm 0.01V$

【Output voltage is converted into a primary nominal value.】

current $I_f$ (A)	Output voltage $V_{out}[V]$					Remarks
	No. 1	No. 2	No. 3	No. 4	No. 5	
6.25	0.6248	0.6220	0.6244	0.6240	0.6220	×4
12.50	0.6254	0.6226	0.6248	0.6240	0.6224	×2
18.75	0.6253	0.6225	0.6249	0.6244	0.6225	×4/3
25.00	0.6254	0.6224	0.6250	0.6243	0.6223	×1

average A	0.6252	0.6224	0.6248	0.6242	0.6223
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【Linearity is searched for.】

1. An average A of the four above-mentioned points is calculated.
2. The linearity of each point is searched for by the following formula.

$$\epsilon = (V_{out} - A) / A \times 100 (\%)$$

【standard value】    less than  $\pm 0.2\%$

current $I_f$ (A)	Linearity    [%]					Remarks
	No. 1	No. 2	No. 3	No. 4	No. 5	
6.25	-0.068	-0.061	-0.060	-0.027	-0.049	
12.50	0.028	0.036	0.004	-0.027	0.016	
18.75	0.013	0.021	0.021	0.033	0.033	
25.00	0.028	0.004	0.036	0.021	0.000	

- 『Hysteresis width①』     $I_f$  : 3 pin short    【standard value】    less than  $\pm 0.25mV$

	No. 1	No. 2	No. 3	No. 4	No. 5	Remarks
0 (A)	2.5061	2.5046	2.5082	2.4933	2.4953	Output voltage
+ $I_f$ (A) → 0	2.5062	2.5046	2.5082	2.4933	2.4952	Output voltage
Hysteresis width	0.0001	0.0000	0.0000	0.0000	-0.0001	

- 『Hysteresis width②』     $I_f$  : Through hole    reference standard value    less than  $\pm 2.5mV$

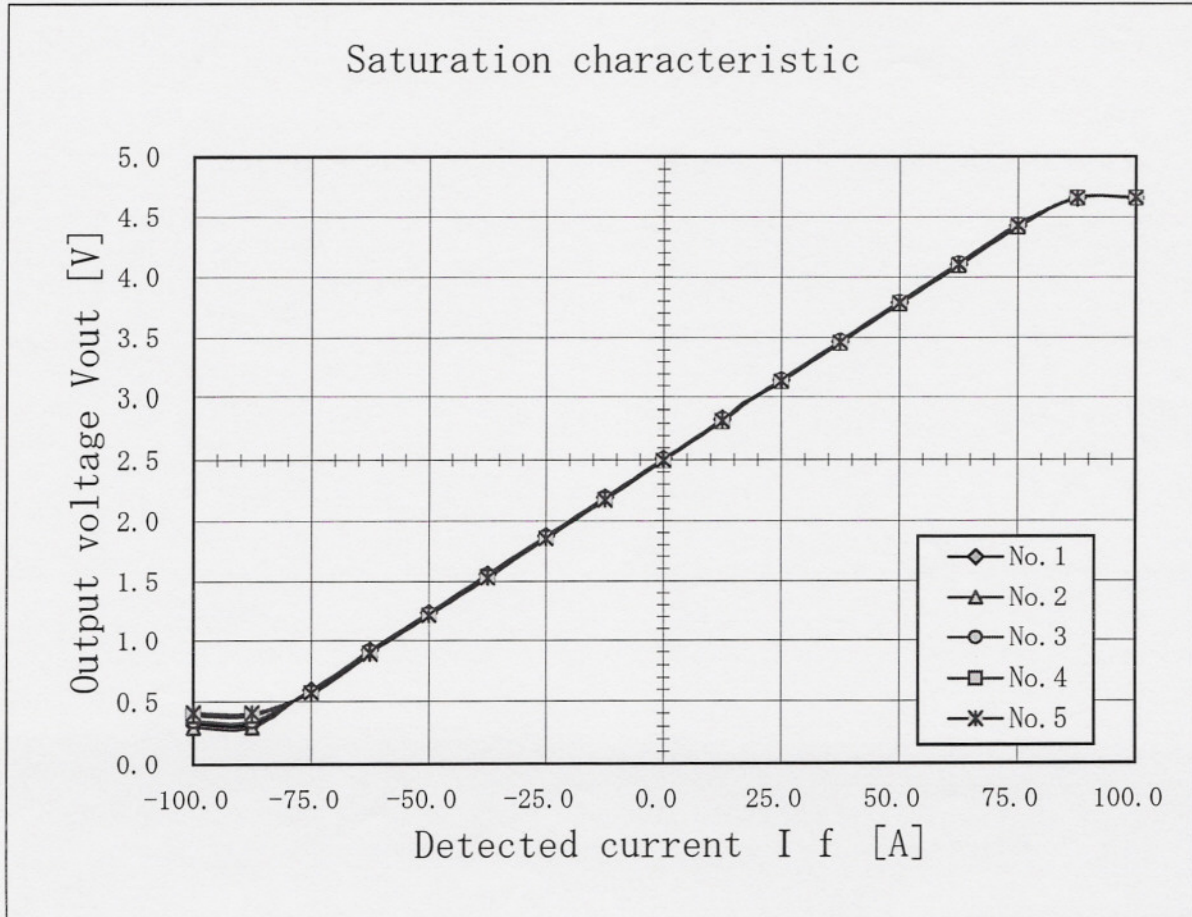
	No. 1	No. 2	No. 3	No. 4	No. 5	Remarks
$I_f = 0$	2.4097	2.5081	2.5117	2.4974	2.4996	Output voltage
+ $I_f \times 3 \rightarrow 0$ (A)	2.4088	2.5075	2.5109	2.4976	2.5005	Output voltage
Hysteresis width	-0.0009	-0.0006	-0.0008	0.0002	0.0009	



## 2. Saturation characteristic

RL=10k $\Omega$  Vcc=+5V

current I <sub>f</sub> (A)	Output voltage V <sub>out</sub> [V]					Remarks
	No. 1	No. 2	No. 3	No. 4	No. 5	
100.0	4.660	4.660	4.664	4.667	4.665	
87.5	4.660	4.660	4.663	4.667	4.665	
75.0	4.427	4.418	4.438	4.413	4.429	
62.5	4.105	4.100	4.116	4.092	4.107	
50.0	3.786	3.779	3.795	3.773	3.786	
37.5	3.467	3.461	3.475	3.453	3.463	
25.0	3.147	3.143	3.153	3.133	3.140	Primary nominal
12.5	2.828	2.824	2.831	2.814	2.817	
0.0	2.510	2.507	2.511	2.495	2.496	
-12.5	2.194	2.188	2.194	2.175	2.171	
-25.0	1.874	1.872	1.874	1.856	1.849	
-37.5	1.556	1.553	1.555	1.538	1.526	
-50.0	1.237	1.237	1.234	1.218	1.213	
-62.5	0.920	0.918	0.916	0.900	0.894	
-75.0	0.600	0.602	0.595	0.581	0.570	
-87.5	0.327	0.301	0.349	0.392	0.412	
-100.0	0.329	0.302	0.350	0.392	0.413	

standard value] more than  $\pm 75A$ 



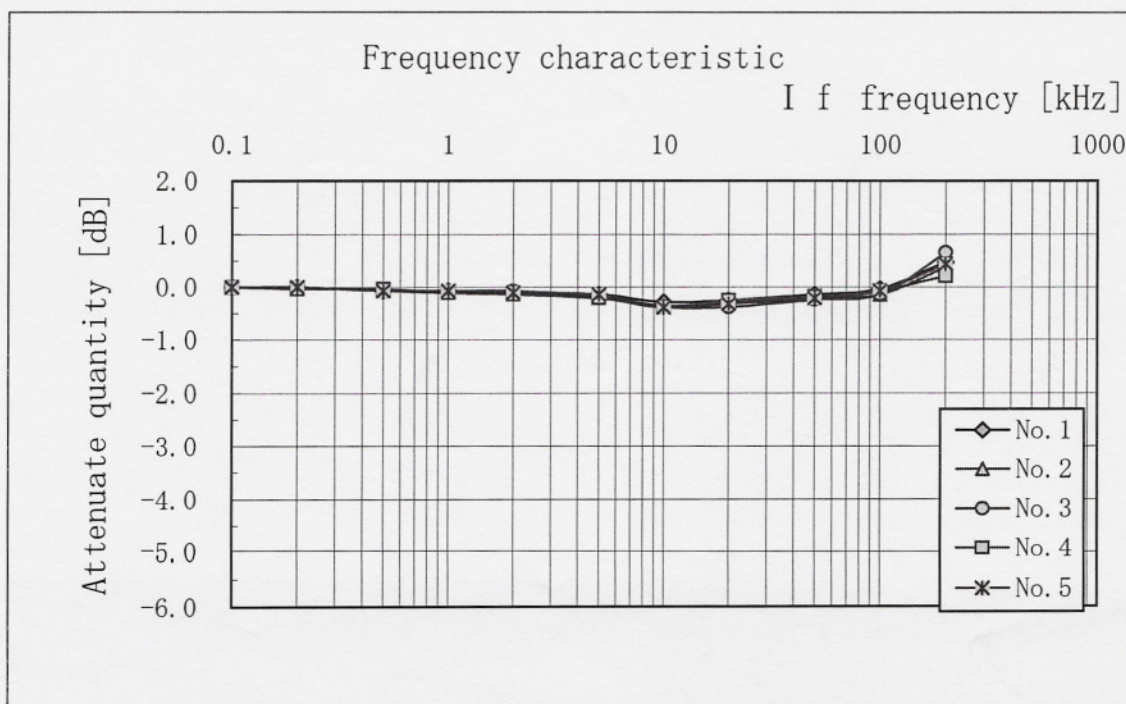
### 3. Frequency characteristic 【Reference data】

Primary normal current  $I_f=1(\text{Arms})$   $V_{cc}=+5\text{V}$   $R_L=10\text{k}\Omega$

I f frequency [kHz]	Output voltage Vout[V]					Remarks
	No. 1	No. 2	No. 3	No. 4	No. 5	
0.1	24.8	24.9	25.1	24.7	24.7	
0.2	24.8	24.9	25.1	24.6	24.7	
0.5	24.6	24.7	24.9	24.6	24.5	
1	24.6	24.6	24.9	24.4	24.5	
2	24.5	24.6	24.9	24.3	24.4	
5	24.4	24.4	24.6	24.1	24.3	
10	24.0	23.9	24.0	23.6	23.6	
20	24.1	24.1	24.0	24.0	23.8	
50	24.4	24.3	24.4	24.2	24.1	
100	24.7	24.5	24.7	24.4	24.5	
200	26.0	26.0	27.1	25.3	26.0	

I f frequency [kHz]	Output voltage attenuate quantity [dB]					Remarks
	No. 1	No. 2	No. 3	No. 4	No. 5	
0.1	0.000	0.000	0.000	0.000	0.000	
0.2	0.000	0.000	0.000	-0.035	0.000	
0.5	-0.070	-0.070	-0.069	-0.035	-0.071	
1	-0.070	-0.105	-0.069	-0.106	-0.071	
2	-0.106	-0.105	-0.069	-0.142	-0.106	
5	-0.141	-0.176	-0.175	-0.214	-0.142	
10	-0.285	-0.356	-0.389	-0.396	-0.396	
20	-0.249	-0.284	-0.389	-0.250	-0.322	
50	-0.141	-0.212	-0.246	-0.178	-0.214	
100	-0.035	-0.141	-0.140	-0.071	-0.071	
200	0.481	0.375	0.666	0.208	0.446	

e standard value]  $\pm 0.5\text{dB}$ 以内 at 100kHz





CONDITION [Standard value] less than  $1\mu s$  ( a t  $d i / d t = 25A / \mu s$  )

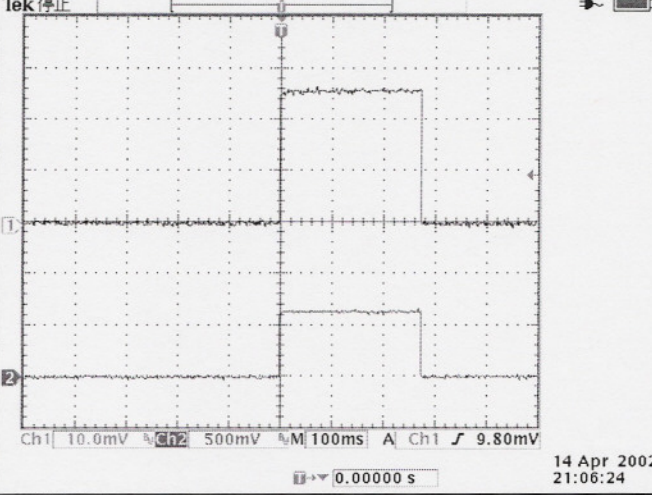
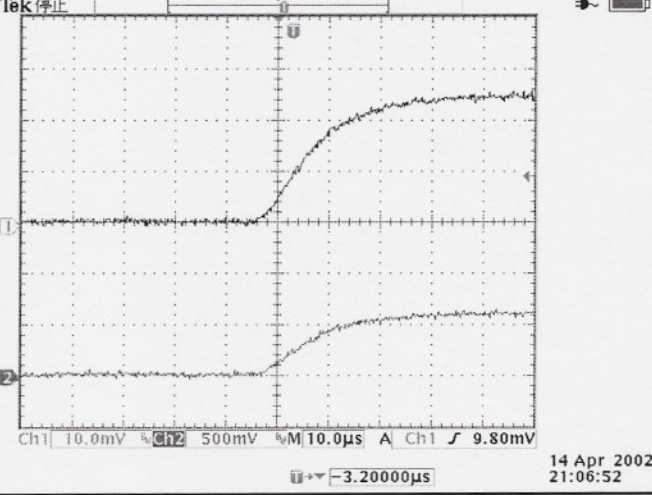
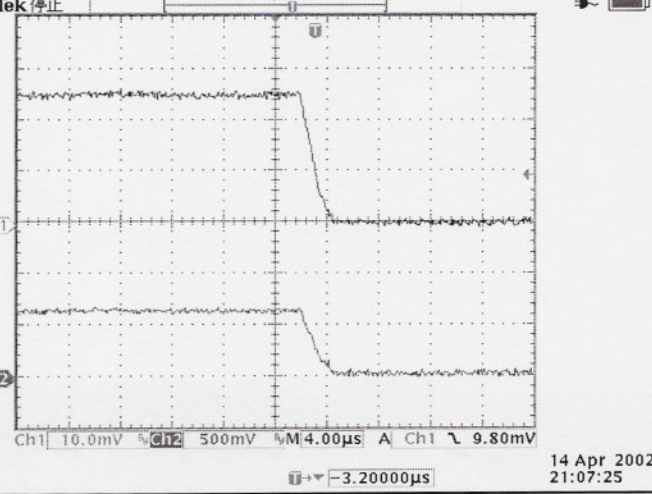
## Response wave form

TEST POINT	OSCILLOSCOPE SETTING	WAVE FORM
No. 1-1	Vert. <u>          </u> 10A /div <u>          </u> 500mV/div <u>          </u> /div <u>          </u> /div Horiz <u>          </u> 100ms/div Notes  Reference wave form	
No. 1-2	Vert. <u>          </u> 10A /div <u>          </u> 500mV/div <u>          </u> /div <u>          </u> /div Horiz <u>          </u> $10\mu s$ /div Notes The waveform at the start is expanded.  Reference wave form	
No. 1-3	Vert. <u>          </u> 10A /div <u>          </u> 500mV/div <u>          </u> /div. <u>          </u> /div. Horiz <u>          </u> $4\mu s$ /div Notes The waveform at the end is expanded.  [Standard value] less than $1\mu s$	



CONDITION 【Standard value】 less than  $1\mu s$  ( a t  $d i / d t = 25A / \mu s$  )

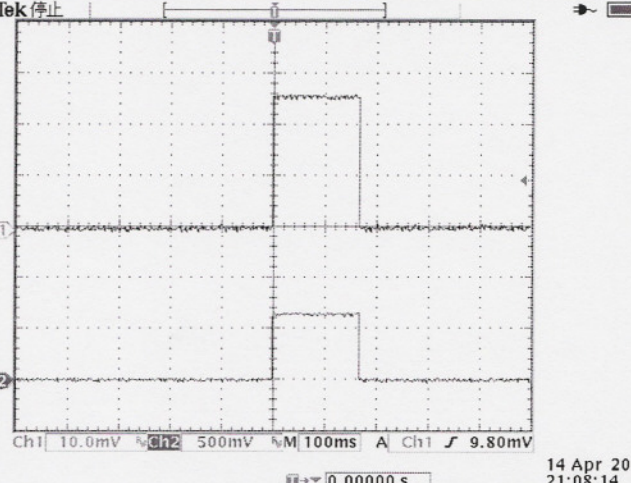
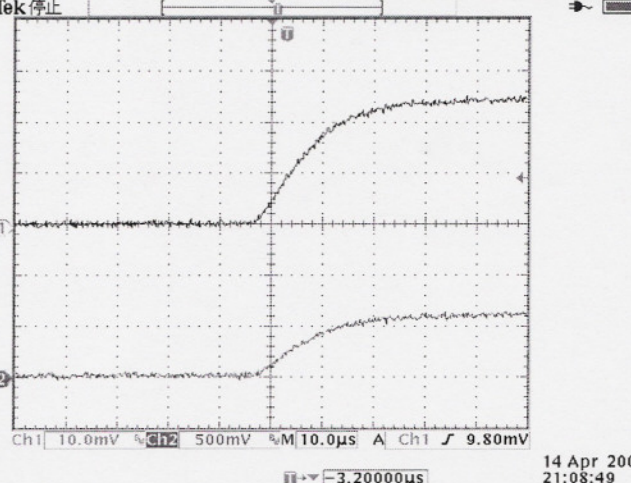
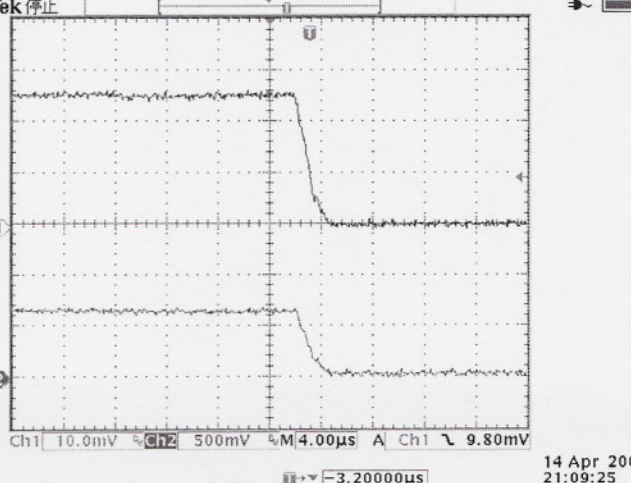
Response wave form

TEST POINT	OSCILLOSCOPE SETTING	WAVE FORM
<p>No. 2-1</p>	<p>Vert. <u>10A /div</u>  <u>500mV/div</u>  <u>/div</u>  <u>/div</u>                      Horiz <u>100ms/div</u>                      Notes                      Reference wave form</p>	 <p>14 Apr 2002 21:06:24</p>
<p>No. 2-2</p>	<p>Vert. <u>10A /div</u>  <u>500mV/div</u>  <u>/div</u>  <u>/div</u>                      Horiz <u>10 <math>\mu</math> s/div</u>                      Notes                      The waveform at the start is expanded.                      Reference wave form</p>	 <p>14 Apr 2002 21:06:52</p>
<p>No. 2-3</p>	<p>Vert. <u>10A /div</u>  <u>500mV/div</u>  <u>/div.</u>  <u>/div.</u>                      Horiz <u>4 <math>\mu</math> s/div</u>                      Notes                      The waveform at the end is expanded.                      【Standard value】 less than <math>1\mu s</math></p>	 <p>14 Apr 2002 21:07:25</p>



CONDITION 【Standard value】 less than  $1\mu s$  ( a t  $d i / d t = 25A / \mu s$  )

Response wave form

TEST POINT	OSCILLOSCOPE SETTING	WAVE FORM
<p>No. 3-1</p>	<p>Vert. <u>                    </u> 10A /div  <u>                    </u> 500mV/div  <u>                    </u> /div  <u>                    </u> /div                      Horiz <u>                    </u> 100ms/div                      Notes                        Reference wave form</p>	
<p>No. 3-2</p>	<p>Vert. <u>                    </u> 10A /div  <u>                    </u> 500mV/div  <u>                    </u> /div  <u>                    </u> /div                      Horiz <u>                    </u> <math>10\mu s</math>/div                      Notes                      The waveform at the start is expanded.                        Reference wave form</p>	
<p>No. 3-3</p>	<p>Vert. <u>                    </u> 10A /div  <u>                    </u> 500mV/div  <u>                    </u> /div.  <u>                    </u> /div.                      Horiz <u>                    </u> <math>4\mu s</math>/div                      Notes                      The waveform at the end is expanded.                        【Standard value】 less than <math>1\mu s</math></p>	



## 5. Temperature characteristic 1 (Offset voltage)

Primary normal current  $I_f=0A$   $R_L=10k\Omega$   $V_{cc}=+5V$ 

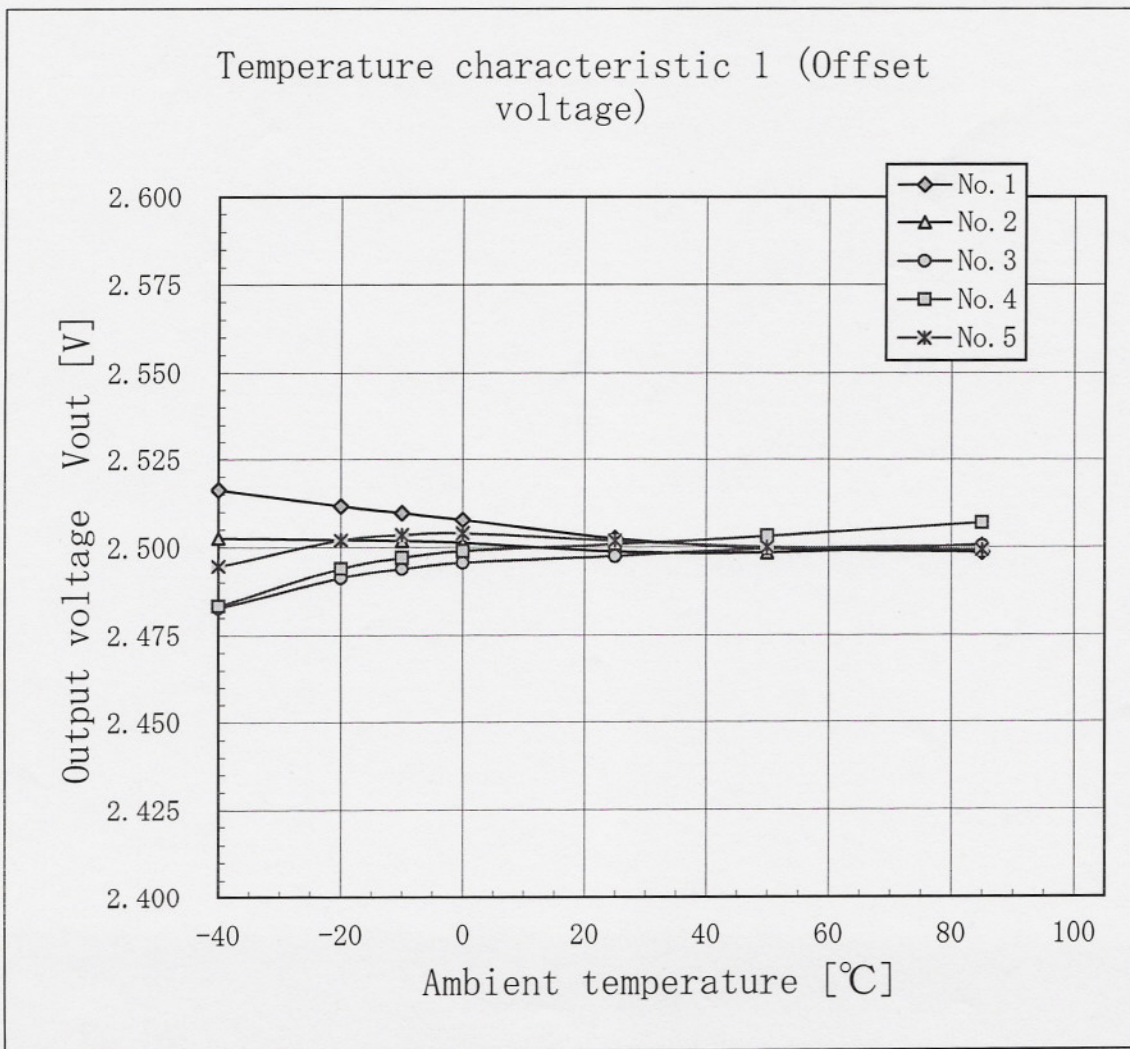
temperature (°C)	Output voltage Vout [V]					Remarks
	No. 1	No. 2	No. 3	No. 4	No. 5	
-40	2.5164	2.5026	2.4828	2.4834	2.4947	
-20	2.5117	2.5020	2.4913	2.4940	2.5019	
-10	2.5097	2.5018	2.4939	2.4971	2.5035	Operating temperature
0	2.5077	2.5012	2.4957	2.4989	2.5039	
25	2.5024	2.4987	2.4974	2.5008	2.5018	
50	2.4996	2.4983	2.4994	2.5030	2.5000	
85	2.4984	2.5006	2.5003	2.5068	2.4991	
▼ 105						

(mV/°C) standard value (Typ)

coefficient 25→-10	0.2086	0.0886	-0.1000	-0.1057	0.0486	0.2000
coefficient 25→85	-0.0667	0.0317	0.0483	0.1000	-0.0450	0.1000

[Reference standard value (Typ)]

-10~+85°C	48ppm	5ppm	27ppm	41ppm	20ppm	50ppm
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6. Temperature characteristic 2 (Primary nominal output voltage)

Primary normal current  $I_f=25[AT]$   $R_L=10k\Omega$   $V_{CC}=+5V$

temperature (°C)	Output voltage Vout [V]					Remarks
	No. 1	No. 2	No. 3	No. 4	No. 5	
-40	3.1305	3.1084	3.1250	3.0748	3.0768	Operating temperature
-20	3.1268	3.1113	3.1246	3.0861	3.0883	
-10	3.1254	3.1136	3.1251	3.0916	3.0941	
0	3.1240	3.1159	3.1259	3.0966	3.0991	
25	3.1219	3.1215	3.1285	3.1070	3.1086	
50	3.1200	3.1255	3.1299	3.1153	3.1158	
85	3.1180	3.1296	3.1312	3.1233	3.1210	
105						

[considering fluctuations of the offset voltage by temperature.]

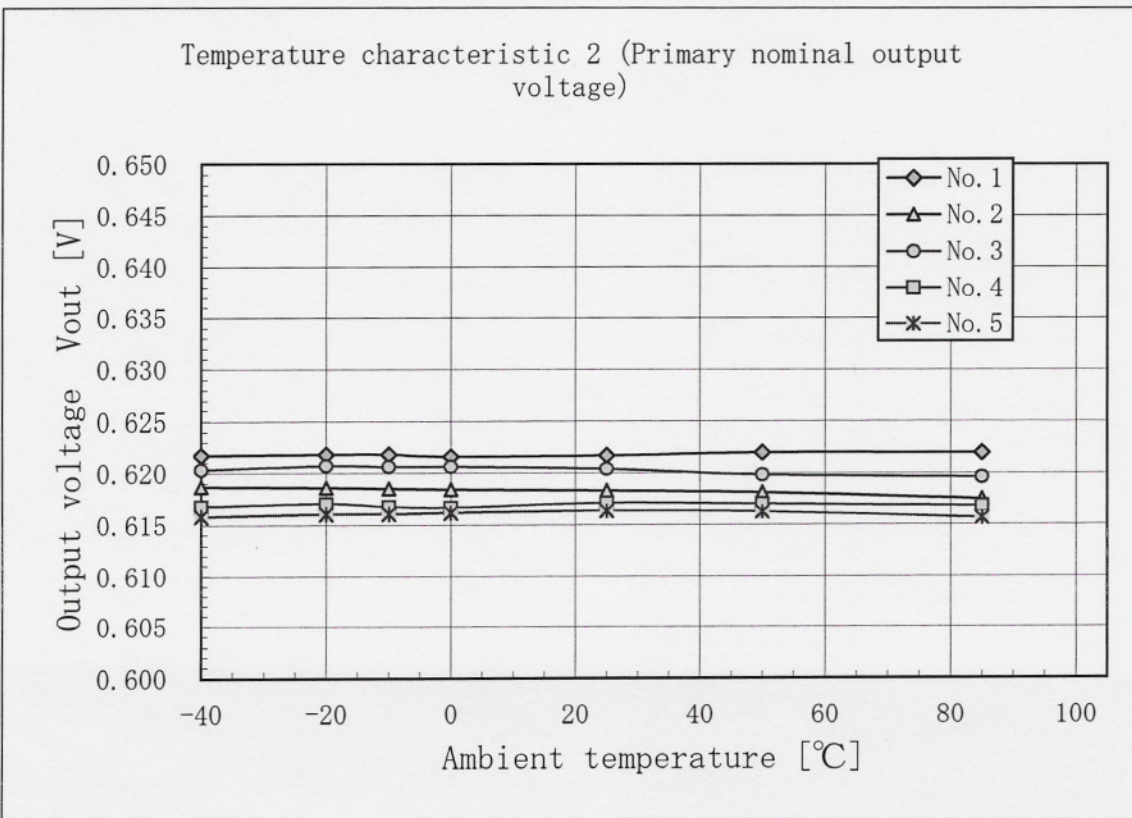
temperature (°C)	Output voltage Vout [V]					Remarks
	No. 1	No. 2	No. 3	No. 4	No. 5	
-40	0.6217	0.6187	0.6203	0.6167	0.6158	Operating temperature
-20	0.6218	0.6186	0.6207	0.6170	0.6160	
-10	0.6218	0.6185	0.6206	0.6167	0.6160	
0	0.6216	0.6184	0.6206	0.6166	0.6161	
25	0.6217	0.6183	0.6204	0.6171	0.6163	
50	0.6220	0.6181	0.6198	0.6170	0.6162	
85	0.6220	0.6175	0.6196	0.6168	0.6156	
105						

(mV/°C) :standard value (Typ)]

coefficient 25→-1	0.00286	0.00571	0.00571	-0.01143	-0.00857	0.03200
coefficient 25→8	0.00500	-0.01333	-0.01333	-0.00500	-0.01167	0.03200

[Reference standard value (Typ)]

-10~+85°C	4ppm	17ppm	17ppm	1ppm	7ppm	50ppm
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## 7. Power supply characteristic

【Reference data】

RL=10k $\Omega$ 

Power supply [V]	Output voltage Vout [V]						Remarks
	No. 1		No. 2		No. 3		
	No. 1-at 0A	No. 1-at 25A	No. 2-at 0A	No. 2-at 25A	No. 3-at 0A	No. 3-at 25A	
5.50	2.5079	3.1332	2.5052	3.1307	2.5069	3.1319	Operating voltage
5.25	2.5077	3.1341	2.5049	3.1304	2.5069	3.1318	
5.20	2.5077	3.1340	2.5048	3.1303	2.5069	3.1320	
5.10	2.5077	3.1341	2.5047	3.1301	2.5069	3.1320	
5.00	2.5076	3.1342	2.5046	3.1300	2.5069	3.1319	
4.90	2.5075	3.1343	2.5045	3.1299	2.5070	3.1319	
4.80	2.5075	3.1343	2.5044	3.1297	2.5070	3.1319	
4.75	2.5075	3.1348	2.5044	3.1296	2.5072	3.1319	
4.50	2.5074	3.1347	2.5042	3.1292	2.5071	3.1319	

Operating voltage)  $5V \pm 5\% (\pm 0.25V)$  【Reference standard value】 Offset voltage) 0.005V/V  
 Output voltage) 0.01V/V

